

ANNUAL OPERATIONS AND PROGRESS REPORT

From Month/Year January 1985
to Month/Year December 1985

(To be submitted for each mining operation at the end of each calendar year to the Division at this address:)

STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
355 West North Temple
3 Triad Center, Suite 350
Salt Lake City, Utah 84180-1203
(801) 538-5340

OPERATOR: Sunshine Mining Co. MINE NAME: Apex Shaft/Burgin Develop.
ADDRESS: P. O. Box 250 Trixie Mine
Eureka, Utah 84628
PERMIT NUMBER AND DATE OF PERMIT: ACT/049/009 May 1982
REPRESENTATIVE: T. B. Hannifin, Jr. - Resident Manager
SECTION(S): 22,28,15 TOWNSHIP(S): 10 South RANGE(S): 2 West
MINERAL(S) MINED: silver/lead, zinc, copper, lead
STATE AND/OR FEDERAL MINERAL LEASE NUMBERS: N/A
SPECIAL USE PERMITS AND/OR RIGHTS-OF-WAY: N/A

Section 40-8-15 and Rule M-8 of the Utah Mined Land Reclamation Act, requires each operator to include with this report an up-dated map and plan prepared in accordance with Rule M-3, as outlined in the requirements for annual report maps in Appendix I, providing a detailed status of all mining and reclamation activities which have occurred during the past year.

The report should include:

MINING:

(a) Tabulation of acreage disturbed (by pits, roads, facilities, etc.) during the report period with illustration on a current map.

Disturbance

Acreage

Pit
Roads
Facilities
Waste Dumps
Other

0.23

* reflects direct impact of
waste dumps - Trixie &
Apex

(b) Tabulation of acreage affected to date (by years).

Date by Year

Acreage (Total)

1975
1976
1977
1978
1979
~~1980~~ 1982
~~1981~~ 1983
~~1982~~ 1984
~~1983~~ 1985

0.54
3.34
71.74

* number reflects additional
new permitted areas(atta.A)

(c) Tabulation of all topsoil (new) stockpile volumes (see chart below)
and date of stockpiling.

SOIL TABULATION CHART

Area Affected (in mining sequence)
(If more space is needed, please attach.)

Area
1 2 3 etc.
*

Acreage of Area	0.00	0.00	-0-
Depth of Topsoil Removal (inches)	-0-	-0-	-0-
Depth of Topsoil Replacement (inches)*	-0-	-0-	-0-
Estimate of Topsoil Volume Salvaged (yd ³ or ac ft)	-0-	-0-	-0-
Volume Actually Salvaged (yd ³ or ac ft)	-0-	-0-	-0-
Volume Required for Reclamation (yd ³ or ac ft)	-0-	-0-	-0-
Surplus or Deficit Volume (yd ³ or ac ft)	-0-	-0-	-0-
Storage Status (short- or long-term)	-0-	-0-	-0-

Apex - #1 Tailings Pond - #4
Trixie - #2 Settling Pond - #5
Burgin Mill - #3 Hunter Shaft - #6

* see attachment B

Soil Tabulation Chart (continued)

Area Affected (in mining sequence) (Apex Permit Area)	Area			
	1	2	3	etc.
Storage Location	On Site			
Area Where Soil Has Been Used (if not stored)	N/A			
Running Total (all stockpiles) (yd ³ or ac ft)	6,500 yd ³			
Short-term	-0-			
Long-term	Yes			

*Of previously stripped area recently reclaimed.

(d) Tabulation of all (newly removed) out-of-pit spoil volumes, date of placement and illustration on a map.

<u>Area</u>	<u>Date</u>	<u>Acreage</u>

(e) Tabulation of quantity of commodity mined.
(See Attachment B)

	<u>Commodity</u>	<u>Tonnage</u>
(Mined)	Ag, Au, Cu	17,835
(Milled)	Ag, Au, Cu	18,507
(Direct Ship)	Ag, Au, Cu	11,713

(f) Description of any new construction during the report period with illustration on a map, including, but not limited to:

1. Buildings and support facilities.
None for 1985

2. Roads.
None for 1985

Disturbance

Acreage

Pit
Roads
Facilities
Waste Dumps
Other

See Page 2

(b) Tabulation of acreage affected to date (by years).

Date by Year

Acreage (Total)

1975
1976
1977
1978
1979
1980
1981
1982
1983

See Page 2

(c) Tabulation of all topsoil (new) stockpile volumes (see chart below) and date of stockpiling.

SOIL TABULATION CHART

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Area Affected (in mining sequence) (If more space is needed, please attach.)	Area			etc.
	1 4	2 5	3 6	
Acreage of Area	-0-	-0-	-0-	
Depth of Topsoil Removal (inches)	-0-	-0-	-0-	
Depth of Topsoil Replacement (inches)*	-0-	-0-	-0-	
Estimate of Topsoil Volume Salvaged (yd ³ or ac ft)	-0-	-0-	-0-	
Volume Actually Salvaged (yd ³ or ac ft)	-0-	-0-	-0-	
Volume Required for Reclamation (yd ³ or ac ft)	-0-	-0-	-0-	
Surplus or Deficit Volume (yd ³ or ac ft)	-0-	-0-	-0-	
Storage Status (short- or long-term)	-0-	-0-	-0-	

3. Diversion ditches, collector ditches, interceptor ditches, etc.

No new ditches were constructed in 1985. Existing ditches at the Burgin Mill Permit Area were cleaned so they will adequately contain all runoff.

4. Culverts.

One new culvert was installed at the Burgin Mill Permit Area to facilitate drainage away from newly reseeded areas.

5. Sediment ponds, containment ponds.

Two small tailings impoundment ponds were used during 1985. These ponds are located in the area that is designated Burgin Permit. Present plans call for regrading and reseeding these two ponds which are designated ponds 2 & 4 on the map.

6. Monitoring sites (vegetative, air quality, surface subsidence, surface water or ground water, etc.).

A ground water study was conducted in Goshen Valley to determine if any impacts to the ground water in this area had occurred from previous Burgin Mine discharge water (pre-1978). Results from this study showed no ground water degradation has occurred in the study area.

7. Topsoil stockpiles.

No new construction was completed where topsoil would be disturbed, (no topsoil covered areas utilized) so no topsoil was present to be stockpiled.

(g) Description of any environmental problem areas with a proposed plan for mitigation and illustration on a map, including, but not limited to:

1. Pit stability problems.

N/A

2. Subsidence.

N/A

3. Accidental water discharge, dam failure, etc.
N/A

4. Slumping, sliding or erosion.
- Test plot at Apex monitored annually. Final report submitted to State on November 4, 1985.

5. Revegetation problem areas.
None

6. Existence and location of unsuitable (toxic) overburden.

RECLAMATION:

(a) Tabulation of the acreage reclaimed during the report period with illustration on a map, distinguishing between:

1. Backfilled, graded and contoured areas.

<u>Area</u>	<u>Acreage</u>
Burgin Mill Permit Area	1.83 Acres

2. Topsoiled areas.

<u>Area</u>	<u>Acreage</u>
None - Previous operator did not save topsoil for areas that were backfilled, graded and contoured in 1985.	

3. Seeded areas.

<u>Area</u>	<u>Acreage</u>
Burgin Mill Area	1.83 Acres

4. Reseeded areas (areas previously seeded, then seeded again).

<u>Area</u>	<u>Acreage</u>
None	

(b) Tabulation of total acreage reclaimed (seeded with permanent seed mix) to date by years with illustration on an updated map: Seeded with mix shown in Attachment C.

<u>Year</u>	<u>Acreage</u>
1975	
1976	
1977	
1978	
1979	
1980	
1981	
1982	
1983	
1984 1985	1.83 Acres

(c) Description of the reclamation procedures used during the report period, including:

1. Average depth of topsoil applied.

The previous operators did not save any topsoil for
the area that was reseeded. No topsoil was applied.

2. Type of seed (species) used for seeding during the report period.

Agropyron cristoratum - Crested Wheatgrass
Oryzopsis hymenoides - Indian Rice Grass
Elymus junceus - Russian Wildrye
Melilotus officinalis - Yellow Sweetclover

3. Date of seeding during the report period.

Spring

Early Summer

Fall

4. Seeding procedures used.

(Hand broadcast or drilled or any other).

All seed was hand broadcast

5. Rate of seed application.

Pounds Per Acre of Pure Live Seed (PLS) (if varied, please explain)

Crested Wheatgrass 5.0 lbs/acre

Indian Ricegrass 5.0 lbs/acre

Russian Wildrye 5.0 lbs/acre

Yellow Sweetclover 5.0 lbs/acre

6. Type and rate of fertilizer applied.

A starter fertilizer was used:

diammonium phosphate - 18-46-0 @ 150 lbs/acre

7. Type and rate of mulch applied.

Straw was applied at a depth of 2 - 3 inches over all
reseeded areas and then packed with a cat.

8. Rate of irrigation water applied, if any. Please describe any
type of sprinkling, or water applied (water truck, etc.).

None Applied

9. Revegetation test plot information.

(Cover, density, productivity, etc.)

See Attachment B

10. Soil analysis results.
None

(d) Description of results of previous revegetation efforts, including:
(This should be done as applicable.)

1. Types (species) of seed that have germinated and are growing.
See Attachment B

2. Types (species) of seed that are not growing successfully.
See Attachment B

3. Areas experiencing problems with weeds and weed types.
None

4. Significant erosional problems.
None

5. Areas of unsuitable overburden on the surface as related to
revegetation failure.
N/A

6. Procedures used or proposed to correct these problems.
N/A

7. Acreage and dates of release (upon inspection by the State) of revegetated areas.

<u>Area</u>	<u>Date</u>	<u>Acreage</u>
None To Date		

8. Results of soil analysis.

N/A

(e) Summarization of the reclamation costs incurred during the report period, including itemized costs for each operation (i.e., grading, topsoil replacement, seeding, etc.) and for each type of disturbance (i.e., spoil, haul roads, facilities removal, etc.) on a per acre basis.

	<u>Acres</u>	<u>Cost/Acre</u>
1. Grading		
2. Backfilling		
3. Contouring		
4. Topsoil Replacement		
5. Seeding		
A. Seedbed Preparation		
B. Mulch	1.83	\$ 18.00
C. Fertilizer	1.83	\$ 20.00
D. Seed	1.83	\$200.00
6. Other - Labor	1.83	\$218.00

BOND INFORMATION:

- A. An updated bond estimate should be included, if required in the Division's approval of the Mining and Reclamation Plan (MRP) or if changes to the MRP have occurred, including a detailed itemization of actual/estimated reclamation costs as outlined in the RECLAMATION section above. The date of the release of revegetated areas from further responsibility for a partial bond release, if applicable, should also be included.

	<u>Amount</u>	<u>Type</u>	<u>Date Posted</u>
Present Bond	\$737,000	Surety	Oct. 1984

Increased disturbance, if any:

N. A.

Increased Bond Amount (attached reclamation estimate).

B. Bond release.

<u>Acres</u>	<u>Bond Amount Released</u>	<u>Date</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

ADDITIONAL INFORMATION:

Supply any additional information as requested by the Division related to:

- (a) Permit stipulations (status).
- (b) Other special conditions (status).

ATTACHMENT A

Acreage Summary

<u>Permit Area</u>	<u>Permit Acreage</u>	<u>Projected Total Disturbed Acres</u>	<u>Actual Disturbed Acres</u>
Trixie [*]	11.4	8.55	8.55
Hunter Shaft ^{*(2)}	10.0	7.17	-0-
Burgin Mill ^{*(1)}	57.9	29.40	29.40
Tailings Pond ^{*(2)}	41.37	28.67	-0-
TOTALS:	300.67	109.89	37.95

2. Conduit ROW not reseeded.

* New areas permitted during 1985

(1) Permit areas that work was performed on during 1985.

(2) Permit areas that Sunshine has not utilized during 1985.

ATTACHMENT B

	<u>Tons</u>
Mine Production 1985 (Trixie)	17,835
Milled (Concentrated) 1985	18,507
Direct Shipping Ore (Shipped) 1985	11,713

The variance between total tons produced (Mined), 17,835 tons and total tons milled and direct shipped, 30,220 tons or 12,385 was due to processing a low grade part of the mine dump.

Low grade material removed from the Trixie Mine dump accounted for 12,385 tons or 10,091 yd³.

Waste production at the Trixie Mine produced 4,562 tons of material or 3,717 yd³.

Due to the concentrating of the lower grade part of the dump the actual yd³ contained in the dump decreased by 6,374 yd³ during 1985.

ATTACHMENT C

Burgin Mine Test Plots

Introduction

In 1981, a test plot program was devised in conjunction with the Division of Oil, Gas and Mining to deal with revegetation of waste rock at the Apex Shaft. Sufficient topsoil was not available to cover all the old and new waste rock areas associated with this development shaft of the Burgin Mine complex. Thus the attempt to seed directly into waste rock piles to create a vegetative cover. The complete test plot program is available in the 1982 Notice of Intent for the Apex Shaft of the Burgin Mine.

The soil treatment was initiated in April, 1982 by liming the acid waste rock site with calcium carbonate (CaCO_3). After a six day wait the seeding was begun under the following program:

1. Plots 100 ft²

A,B,C and D on the acid waste rock

E,F,G, and H on the neutral waste rock

I,J,K and L on the soil storage pile

2. Seed Mixture applied at one (1) ounce per plot

<u>Common Name</u>	<u>Scientific Name</u>	<u>lbs/A</u>
crested wheatgrass	Agropyron cristoratum	5
Indian ricegrass	Oryzopsis hymenoides	5
Russian wildrye	Elymus junceus	5
yellow sweetclover	Melilotus officinalis	5
Total		20

3. Fertilization with diammonium phosphate 18-45-0 at 6 ounces per plot

4. Mulch was Conweb Hydro Mulch Fiber of one bale for six plots

5. Test plot preparation:

Acid Waste Rock

A. seed and lime

B. seed, lime and fertilize

C. seed, lime and mulch

D. seed, lime, fertilize and mulch

Neutral Waste Rock

- E. seed only
- F. seed and fertilize
- G. seed and mulch
- H. seed, fertilize and mulch

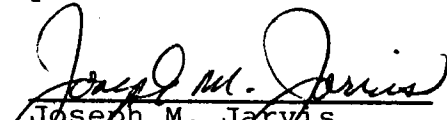
Topsoil Pile

- I. seed only
- J. seed and fertilize
- K. seed and mulch
- L. seed, fertilize and mulch

6. Results from August, 1985 field work using 3 random quadrats per plot:

Plot	% Total Ground Cover	# Species Seed Mix	# Plants Seed Mix	# Plants 100 ft ²
A	15	3	24	348
B	5	2	8	116
C	5	2	33	478
D	7	2	20	290
	Mean 8	2	21	308
	# Species: crested wheatgrass - 70			
	Indian ricegrass - 1			
	yellow sweetclover - 14			
E	1	1	2	29
F	12*	1	25	362
G	1	1	4	58
H	6*	1	7	101
	Mean 5	1	9	137
	# Species: crested wheatgrass - 38			
	* fertilized			
I	12	2	11	159
J	25*	2	15	217
K	13	2	21	304
L	26*	2	12	174
	Mean 19	2	15	213
	# Species: crested wheatgrass - 45			
	Russian wildrye - 3			
	yellow sweetclover - 11			
	* fertilized			

The seeding trials occurred during a period of above normal precipitation and plant growth consequently the results were achieved under ideal conditions. The seeded cover on the waste rock plots were small thin plants of which only the crested wheatgrass had reached maturity. The fertilization of plots on the neutral waste rock area produced the only difference in groundcover attributable to the effects of treatment. This effect also appeared in the topsoil plots. Plots J and L (fertilized topsoil) were the only plots to achieve the revegetation requirement of Rule M-10 (70% of 25% native groundcover or diversity of stand). Certainly the groundcover on the waste rock sites was not sufficient to have any positive effects on surface stabilization or erosion. Any use of the stored topsoil for revegetation will require fertilization for best growth potential.


Joseph M. Jarvis
Biologist/Principal
JBR Consultants Group